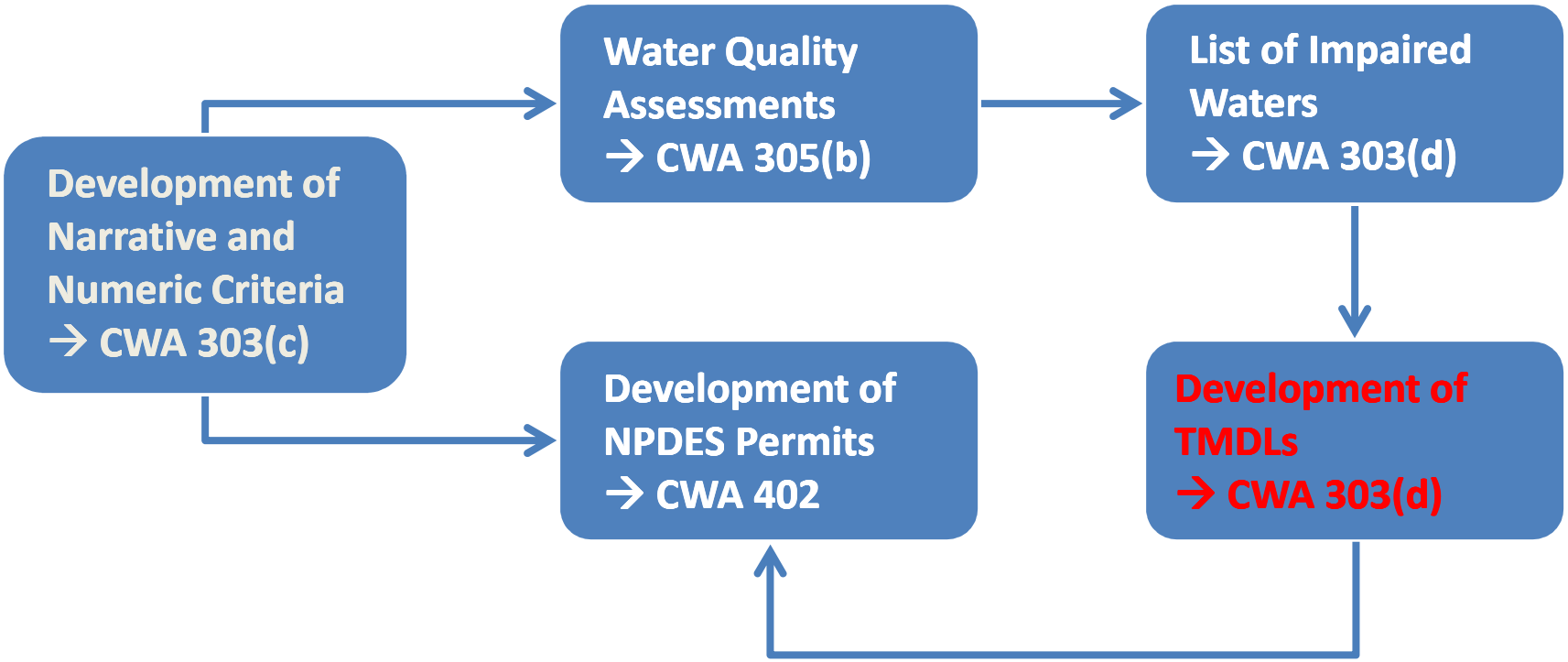
Roadmap for Implementation of Nutrient Criteria for Lakes



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INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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Water

TMDL 101 – Everything You Ever Wanted to Know About Total Maximum Daily Loads

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What is a Total Maximum Daily Load?

- The amount of a pollutant that a waterbody can receive and still meet water quality standards
- A report of pollutant sources and needed reductions
- A tool to guide watershed planning

TMDL Components

- The sum of allowable loads from point sources, or wasteload allocations (WLA) and nonpoint sources, or load allocations (LA) plus a margin of safety (MOS)

$$TMDL = \sum WLA + \sum LA + MOS$$

Why do TMDLs?

- Required by the Clean Water Act
- Provide overview of watershed condition
- Guide local actions to correct problems

What will a TMDL Provide?

- A tool for watershed management
- One-stop-shop for all watershed data
- Load reductions needed to meet water quality standards

Steps in the TMDL Process?

- Develop TMDL sampling plan
- Reassess waterbodies
- Gather data
- Hold a kickoff stakeholder meeting
- Produce draft TMDL report
- Hold a draft TMDL meeting
- Provide 30-day comment period, respond to public comments, submit final TMDL to U.S. EPA for approval

Develop TMDL Sampling Plan

- Identify 303(d) listed streams and lakes in watershed
- Develop TMDL sampling plan to determine extent and magnitude of impairment
- Tour the watershed and identify sources and concerns

Reassess Waterbodies

- Gather new water quality data and coordinate reassessment with 303(d) list coordinator
- Reassess watershed using watershed approach rather than probabilistic
- Develop support document for TMDL

Gathering Data

- Gather internal and external water quality data
- Solicit data and information from external sources
- Gather information on permitted facilities and compliance history
- Locate information on local and regional stakeholders

Kickoff Stakeholder Meeting

- Overview of TMDL development process
- Request locally collected data and information
- Provide information on impaired segments
- Identify concerns for the watershed that need to be addressed in TMDL

Draft TMDL Report

- Gather all data and information to put into report
- Identify and map impairments and sources
- Analyze data and sources and allocate loadings
- Identify potential priority implementation areas (PPIA)
- Develop reasonable assurance (RA) and suggested implementation practices
- Create appendices with additional data for the watershed

Draft TMDL Meeting

- Overview of TMDL results
- Sources of impairment and needed reduction
- Wasteload allocations and Load allocations
- Recommendation for water quality improvements needed
- Introduction to next steps

Submit TMDL to U.S. EPA

- Respond to all public comments
- Combine all information for submittal to U.S. EPA
- Answer any questions from U.S. EPA and make any additional changes to document or responses to comments
- Final TMDL approved by U.S. EPA and posted to IDEM TMDL webpage

TMDL Facts

- Stakeholder driven process
- Based on specific watershed data
- Can impact permits

New to TMDL

- Potential Priority Implementation Areas (PPIA)
- Reasonable Assurance (RA)
- Nonpoint Source watershed management plan format
- More detail on NPDES compliance and long term control plans

Current Nutrient TMDL Process for Rivers and Streams

- Nutrient TMDLs based on Impaired Biotic Community (IBC) listings
- Benchmarks used: Use 0.30 mg/l phosphorus, 10 mg/l nitrogen, and 30 mg/l total suspended solids
- Current TMDLs require the addition of phosphorus monitoring to the permit when the permit is renewed

Investigating for Future TMDL Development

- Recovery Potential
- Schedule of compliance
- Tile drainage estimates
- SUSTAIN urban nonpoint source modeling
- GIS modeling and mapping

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TMDL Phosphorus Implementation

Options and discussion points for TMDL implementation

Watershed Vs. Lake Approach for Developing TMDLs

- A lake only TMDL would address near shore and direct inputs into lakes
- Using watersheds allow for the ability to use a holistic approach to developing loadings

Lake Modeling

- BATHTUB
  - The BATHTUB is a Army Corp of Engineers model and will likely be the model used for lake nutrient TMDL development
  - BATHTUB is an input model that requires the input loadings be calculated by a separate model
  - BATHTUB inputs can be generated with monitoring data or modeling output from a watershed model
  - IDEM currently reviewing BATHTUB and other modeling approaches

Potential Watershed Models

- WASP
- Qual2K
- WARMF
- SWAT
- WAM
- Simple Method
- P-Load
- Sparrow
- L-Thia
- BASIN
- HSPF
- GWLF
- LTHIA
- SWMM
- P8
- Flux
- Presto

Nutrient Implementation Plans

- Illinois- Lake only TMDLs completed. In stream implementation on only dissolved oxygen impaired streams
- Michigan- Each lake water quality target assessed individually. Phosphorus management plans, land use based area loading
- Minnesota- Tiered limits for permitted facilities based upon facility size. Phosphorus Management Plan and guidance
- Ohio- Monitoring based site specific limit for permitted facilities in TMDLs. Draft nutrient management strategy uses 5 point approach
- Wisconsin- Lake and stream criteria. Extensive implementation plan with a lot of options for setting limitations and schedules

Issues to Consider Before Starting a Lake Phosphorus TMDL

- Additional lake monitoring to confirm impairment
- Additional watershed monitoring to determine watershed contribution
- Additional sampling up stream and down stream of NPDES facilities to determine impact
- Watershed modeling
- Schedule of compliance
- Lake TMDL only

Watershed Success Stories

- Pigeon River- Chlordane
- Big Walnut Creek- *E.coli*
- Clifty Creek- *E.coli*
- Bull Run/West Creek- IBC
  - **In Process**
- North and South for Prong Creek- IBC
- Blue River-IBC
- Mill Creek-IBC
- Metcalf Ditch-IBC

Questions?

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